

Research and Development Perspectives in the Mining Industry

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Abstract



Companies across different sectors are investing considerable amounts of resources in research and development and they consider innovation as critical to guarantee their survival. Mining companies had been moving in the opposite direction in the last decades. Although reasons may differ among the companies, the common effect was a reduction of internal R&D teams with consequences to how mining companies deal with innovation. Recent changes intrinsic to the sector are challenging the *status quo* and the mining companies need to review their research and development strategies to stay competitive. This paper discusses the recent history and reasons leading to the reduction in R&D investment and the challenges faced by the mining sector requiring consideration in the current market scenario.

Keywords: Mining, Research and Development, Innovation, Strategy.

1. Short-Term History of R&D in the Mining Industry

Companies across a range of industries spent US\$ 2.3 trillion in 2019, or 2 % of global GDP, in R&D [1]. The pharmaceutical industry leads the way spending 52 % of the EBITDA in R&D which equates to US\$ 178 billion as shown in Figure 1 and Figure 2.

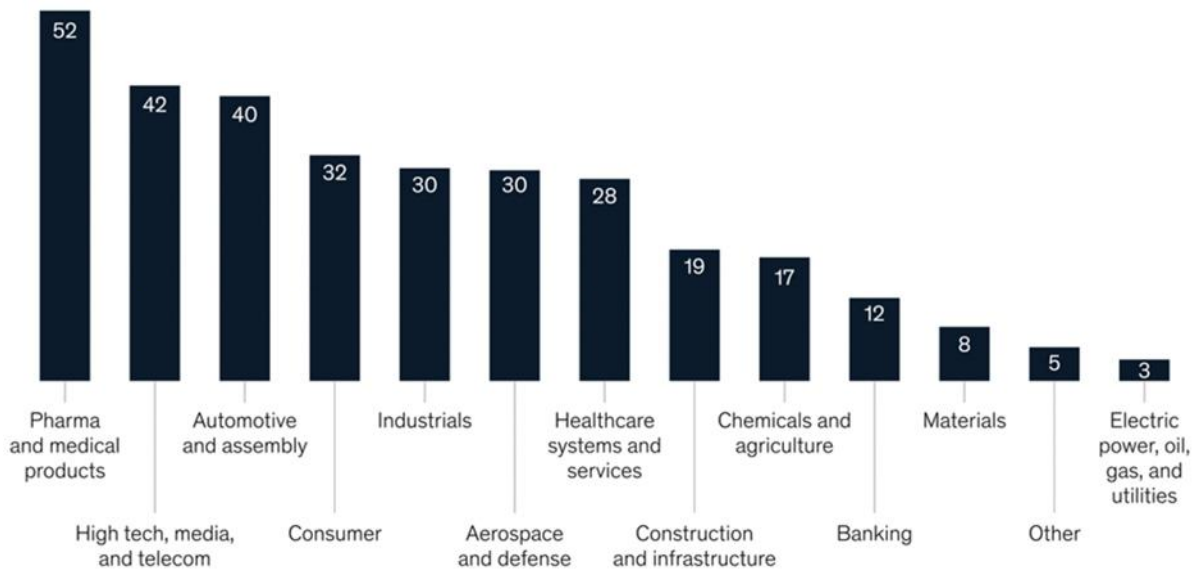


Figure 1. Global private-sector R&D spending as a share of EBITDA, in % [1].

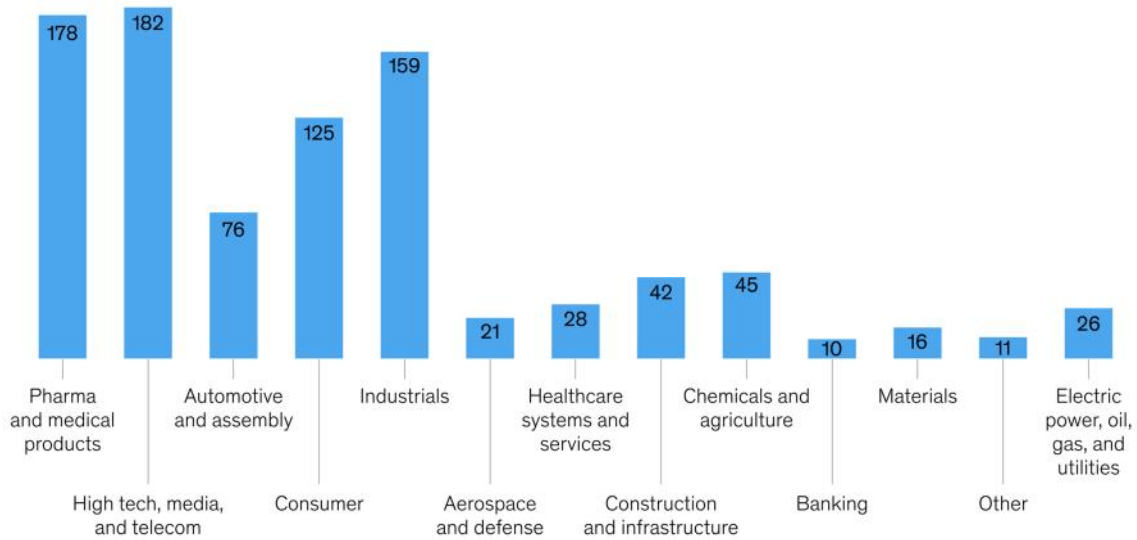


Figure 2. Total global private-sector R&D investment, in US\$ billion [1].

Oil and gas, in comparison, spent only 3 % of EBITDA or US\$ 28 billion in the same period. Mining industry is not stratified in the study, but it is traditionally lower than oil and gas.

The mining industry has a very low R&D intensity, around 0.5 % measured as R&D expenditure/Gross revenue, compared to other industries like IBM (6.1 %), Boeing (10.7 %) and AstraZeneca (13.4 %) [2] as shown in Figure 3.

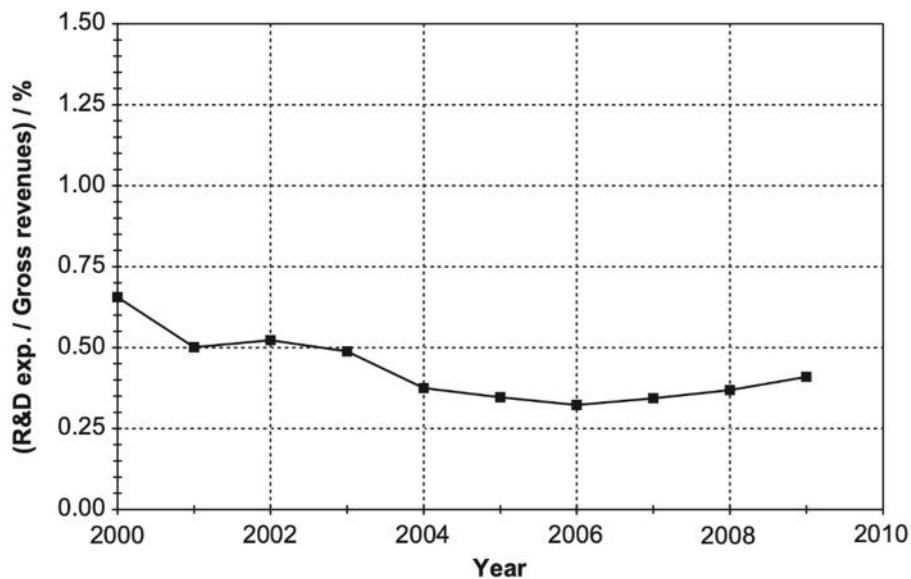


Figure 3. R&D spending trend in the mining industry, data from Alcoa, Anglo American, ArcelorMittal/Arcelor, BHP Billiton, Boliden, Cameco, Codelco, Eramet, Iluka, Rio Tinto, Sumitomo Metal Mining and Teck [2].

The graph shows that R&D spending in the mining industry steadily decreased up to 2006. The increase after 2006 is attributed to the reduction in revenue after the Global Financial Crisis (GFC) instead to an actual increase in R&D spending [2].

- Development of specialists in critical areas for the companies
- Development of finance mechanism to support emerging high-tech companies

However, the cooperation requires a change in the mindset currently dominant in the industry. The companies need to revise their future R&D budgets to seriously address the challenges. The internal R&D departments must be strengthened, or even rebuilt, and the relationship with other R&D partners must be included in the strategic plan.

Although cooperation is critical for the success of R&D in the mining industry, the formula is different for each company. The R&D strategic plan must be aligned with the business strategy to deliver the expected outcomes.

4. References

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